

MEETING THE NEEDS  
FOR  
NURSING SERVICES  
IN  
TENNESSEE

Report to Sponsors of Survey  
by  
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U. S. Public Health Service  
... FEDERAL SECURITY AGENCY  
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## SECTION I - Introduction

- A. Purpose of the Survey - The overall purpose of the study was to determine supply; current and future needs for nursing personnel in Tennessee; the adequacy of existing programs to prepare the number and kinds of nurses needed; and to recommend ways in which the needs of the people can be met more adequately--specifically to determine the answers to these questions:
1. How many nurses are now in active practice in Tennessee?
  2. How many nurses are needed for all fields of work in the State?
  3. What educational facilities are required in order to prepare the number of all kinds of nurses needed?

B. Sponsors of the Survey

State Health Department  
Tennessee State Nurses' Association  
Tennessee State League of Nursing Education  
Committee for Nursing Education and Nursing Practice  
University of Tennessee

- C. Advisory Committee - The original Advisory Committee to the study was composed of thirteen members chosen from such groups as the State Health department, higher education, industry, hospital administration, and the medical and nursing professions. At the meeting on April 19, for the purpose of initiating this study, the Committee adopted the title "Tennessee Council for Nursing" with the following membership:

Miss Alma E. Gault, President, Tennessee League of Nursing Education,  
Chairman, Tennessee Council for Nursing  
Miss Julia Hereford, Dean, Vanderbilt University School of Nursing,  
Secretary Tennessee Council for Nursing  
Mr. Frank Ahlgren, Editor, Commercial Appeal, Memphis  
Dr. C. E. Brehm, President, The University of Tennessee  
Mr. Walter Hilgers, President-Elect, Tennessee Hospital Association  
Mr. Tom J. Hitch, President, Tennessee Farm Bureau  
Dr. R. H. Hutcheson, Commissioner, State Department of Public Health  
Dr. O. W. Hyman, Vice President, The University of Tennessee  
Mr. Henry Miller, President, Tennessee Hospital Association  
Dr. G. F. Moench, ~~Commissioner~~, ~~DeKalb~~ ~~County~~ General Health District  
Miss Ruth Neil Murry, President, Tennessee State Nurses' Association  
Mrs. W. M. McCallum, President, Tennessee Congress of P.T.A., Inc.  
Colonel E. W. Palmer, President, Kingsport Press, Inc., Kingsport  
Mrs. Edwin B. Powers, President, League of Women Voters of Tennessee  
Mrs. Susan Riley, Professor of English, George Peabody College for Teachers  
Mr. W. A. Seeley, State Supervisor of Trade and Industrial Education  
State Department of Education  
Dr. N. S. Shofner, President, Tennessee State Medical Association  
Mr. J. M. Smith, Commissioner of Education  
Miss Nina E. Wootton, Secretary, Committee on Nursing Education  
and Nursing Practice

Francis Hegel - Dir - PHK



D. Scope of the Study Includes the Four Following Areas:

1. A count of the current supply of nurses
2. An estimate of current needs
3. An estimate of future needs
4. Consideration of ways to produce the number and kinds of nurses needed

Nurses were counted and estimates of needs made in the following categories:

1. Public Health
2. Industry
3. Private Practice
4. Offices
5. Hospitals
  - a. general and allied special
  - b. tuberculosis
  - c. nervous and mental
  - d. chronic and convalescent
6. Schools of nursing
7. Other

The conclusions of the study will reveal existing nursing resources; current and future needs for nursing personnel in the State; the extent to which the present educational system can quantitatively meet current and future needs for professional and non-professional personnel; and the number of students which must be enrolled annually in basic schools of nursing and in training programs for practical nurses to meet the needs by 1960. Consideration is given, to a limited extent, the quality of existing programs in basic schools of nursing and the needs for improvement.

The study is concluded with recommendations concerning the extent to which nursing needs of Tennessee should and can be met, and the kinds of educational systems which will produce the type of nursing personnel needed. Specific "next steps" in the development of nursing services adequate in quality and quantity to meet the needs are included.



## SECTION II - Estimate of Current Supply of Nurse Personnel in Tennessee

It is estimated that the present supply of nurse personnel in Tennessee is 7434. This number includes professional nurses--graduate and student--and non-professional nurse personnel--licensed and student practical nurses, aides, attendants, and other personnel giving bedside care to patients. The current supply of nursing personnel in the State is shown in the following table. Sources of these figures are described in text to follow:

Table I  
Number of Nursing Personnel in Tennessee in Each Category - 1949

Place of Service	Number of Nursing Personnel		
	Total	Prof.	Nonprof.
T o t a l	7,434	4,106	3,328
Public Health	1/ 344	344	
Industry	1/ 236	236	
Offices	1/ 318	318	
Private Practice	1/ 891	891	
Hospitals	2/ 5,490	2,162	3,328
Other	1/ 155	155	

In addition, there are 262 nurses employed in Federal government hospitals in the State. Patients admitted to these hospitals and nurse assignments are made on a nationwide basis. Since the proportion of Tennessee patients is not known it is not possible to determine the responsibility of the State for providing nursing care; therefore, no estimate is made of nursing needs in this category.

### A. Nursing Personnel in Public Health Agencies

As of January 1, 1949, 334 full time public health nurses were employed by public health agencies in Tennessee. 3/

Table II

Number of Public Health Nurses Employed in Various Agencies				
Type of Agency	No. of Agencies	Number of Nurses Employed		
		Total	Supervisors	Staff
T o t a l	69	344	52	292
State Health Department	1	17	13	4
Departments of Health	51	273	26	247
Board of Education	6	21	1	20
Non-official Agencies	7	23	2	21
Schools of Nursing	4	10	10	

1/ As of December 31, 1948 - State Board of Health

2/ See Tables V, VI, VII, and text

3/ State Board of Health



Official agencies employ 93% of the total of 271 staff nurses and 95% of the total 42 supervisors, not including those employed in schools of nursing. Of the staff nurses 85% are employed by departments of health and give generalized nursing service; 73% of the agencies and 50% of the staff nurses are in rural areas. Of the 95 counties in Tennessee, 25 have no nurse engaged in full time public health work in rural areas. Relatively little bedside care is given by public health nurses. All incorporated cities and towns of 10,000 population and above have one or more nurses engaged in full time public health work. Assistance with clinics and followup service is rendered to counties which do not have organized health departments, by nurses in State crippled children's and tuberculosis services.

At present Tennessee has one public health staff nurse to each 10,800 population. A ratio of one public health nurse to each 5,000 population is recommended for minimum health care. 1/

Table III

Educational Qualifications of Public Health Nurses Employed in Tennessee

	Total Number	General Education				Public Health Nursing Education			
		Less Than High School		High School		One or More Col. Degrees		Less Than One Academic Year	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent
Total	344	18	5	253	74	73	21	167	49
Supervisors	52	2	4	23	44	27	52	2	4
Staff Nurses	292	16	5	230	79	46	16	165	56
								134	39
								44	11
								90	13
								12	
								84	
								31	

1/ Emerson, Hays: Local Health Units for the Nation.  
Commonwealth Fund, New York, 1945



## B. Nursing Personnel in Industrial Nursing

As of January 1, 1949, 236 nurses 1/ were employed full time in industrial establishments in Tennessee 2/; of this number 200 or 95% give in-plant service; 8% give home nursing care; two nurses are assigned to personnel departments.

Table IV

General Educational Qualifications of Industrial Nurses in Tennessee of Those for Whom Data Are Known

	Total Number	Less Than High School		High School No College		Some College		One or More Academic Years	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent
T o t a l	156	5	3	117	75	31	20	3	2
Supervisors	6			2	33-1/3	2	33-1/3	2	33-1/3
Staff Nurses	150	5	3	115	77	29	19	1	1

Information relative to postgraduate professional education of the 44 industrial nurses (5 supervisors, 39 staff nurses) for whom complete data are not known reveals the following facts: 21 nurses have had postgraduate clinical courses of three months or more; 13 have had less than one full academic year with credit in industrial hygiene courses; 13 have had less than one full academic year in public health programs of study, and 5 industrial nurses have had one or more full academic years.

## C. Nurses in Private Practice, Offices, and Miscellaneous Categories

The count of nurses in these categories was made from the annual published list of registered nurses in Tennessee. Total number presently employed is 1364:

Office nursing..... 318  
Private practice..... 891  
Miscellaneous..... 155

The "miscellaneous" group includes nurses in professional organizations, infirmaries and others who would not fall into tabulated groups.

## D. Nursing Personnel in Hospitals

The estimated total hospital nursing personnel currently employed in Tennessee is 6134. This includes professional nurses--graduate and student--and nonprofessional nurse personnel in general and allied special, psychiatric, chronic, and tuberculosis hospitals. Nurses in Federal hospitals are not included.

Table V

Number of Beds and Nurses in 166 Hospitals Supplying Nursing Data, as of December 31, 1948, to the State Health Department, by Type of Hospital and Type of Nursing Personnel							
Type Hospital	H o s p i t a l		Number Nursing Personnel				
	Number	Beds	Total	Grad.	Student	Practical	Aide
T o t a l	166	17,449	5,643	1,582	1,288	1,192	1,581
General	117	7,400	4,713	1,486	1,288	690	1,249
Tuberculosis	6	1,080	143	30	-	61	52
Mental	7	6,712	505	24	-	313	168
Chronic	36	2,257	282	42	-	128	112

1/ Including 26 nurses in Oak Ridge

2/ State Health Department



The total number of nursing personnel was estimated by computing ratio of reported personnel to reported number of beds, and applying this ratio to total number of beds. Resulting figures are shown in table below:

Table VI

Number of Beds in 216 Hospitals with Estimated Number of Nursing Personnel by Type of Hospital; Tennessee, December 31, 1948

Type Hospital	H o s p i t a l		Estimated Number Nursing Personnel 1/				
	Number	Beds 2/	Total	Grad.	Student	Practical	Aide
T o t a l	216	18,890	6,134	1,776	1,288	1,314	1,756
General	148	8,125	5,123	1,669	1,288	771	1,395
Tuberculosis	9	1,290	172	36		74	62
Mental	9	6,988	526	25		326	175
Chronic	50	2,487	313	46		143	124

Service is rendered by students in 16 hospitals having schools of nursing and three hospitals to which students are assigned for an affiliated experience. Calculation of the contribution to nursing service by student nurses in terms of replacement equivalents of professional nurses or non-professional personnel is made on the following assumptions: 3/

1. Two-thirds (66-2/3%) of total students enrolled are giving direct care to patients.
2. An hour of student service is three-fourths (75%) as productive as a combined hour of professional and non-professional nurse service.
3. Student nurse service replaces:
  - a) professional nursing service 60 %.
  - b) non-professional nursing service 40%

Therefore, the estimated replacement value of 1288 student nurses is 386 professional nurses plus 258 non-professional personnel. 4/

Table VII

Total Current Supply of Nurse Personnel in Tennessee Hospitals

Type Hospital	T o t a l	Professional	Non-prof.
T o t a l	5,490	2,162	3,328
General	4,479	2,055 <u>6/</u>	2,424 <u>5/</u>
Mental	526 <u>7/</u>	25	501
Chronic	313 <u>7/</u>	46	267
Tuberculosis	172 <u>7/</u>	36	136

1/The number of graduate and practical nurses and aides per bed were calculated and applied to total beds in estimating the number of nursing personnel. There were 158 part time nurses reported (150 in general, 6 in chronic, 2 in tuberculosis hospitals; 74 of these (73 general and 1 in tbc) were graduate nurses. Each was counted as one-half a full time nurse in final figure.

2/State Health Department

3/Measuring Nursing Resources--P.H.S., July 1949

4/ $1288 \times 66\frac{2}{3} = 859$   $859 \times 75\% = 644$  nurse personnel, or 386 professional (60%) 258 non-professional (40%)

5/ $1669$  (From Table VI) plus 386 (student replacement) = 2055

6/ $771$  plus 1395 (from Table VI) plus 258 (student replacement) = 2424

7/ State Board of Health as of December 31, 1948



### SECTION III - Facilities for Preparation of Nursing Personnel

The supply of nurse personnel in the State has been produced primarily by the schools of nursing and training programs for non-professional personnel in Tennessee and in part by advanced professional programs.

#### A. Basic Professional Programs

There are 16 schools of nursing in the State: 12 operated by hospitals and 4 controlled by colleges and universities. One school offers a degree program only, ~~one both degree and diploma~~ programs; and 14, diploma programs. Of the 1273 students enrolled, 68, or 5 percent are in degree programs.

The trend in enrollment was upwards until 1945, but has dropped consistently since, as shown in the table below:

Table VIII

#### Student Nurses Enrolled - 1942 - 1949

	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>
No. Students <u>1/</u>	1734	1614	1940	2078	1850	1722	1365	1273
No. Schools	21	20	20	20	18	16	15	16

From 1945 to 1949 the population in Tennessee increased from 2,878,777 to 3,197,794, or 11 percent. The proportion of student nurses to total population was 41 per 100,000 in 1949, compared with 64.3 in 1945. The 1949 figure should be compared with 61 for the Nation as a whole. Comparable figures of adjoining states are shown below:

Table IX

#### Student Nurses per 100,000 Population in Tennessee and Adjoining States

<u>S t a t e</u>	<u>1945</u>	<u>1949</u>
Tennessee.....	64.3	41
Kentucky.....	48.9	33
Virginia.....	77.3	63
North Carolina.....	70.1	54
Georgia.....	52.5	47
Alabama.....	33.1	31
Mississippi.....	20.4	33
Arkansas.....	29.4	28
Missouri.....	89.1	50

Thirteen of the 16 schools gave "insufficient candidates" as a limiting factor in number of admissions. Other factors limiting enrollment were: housing, in five schools; teaching facilities, in five; clinical facilities, in two; and one school indicated a lack of instructional personnel.



Of the 1609 Tennessee residents admitted to the U. S. Cadet Nurse Corps between July, 1943 and October 1945, 1363 were enrolled within the State; 246, or 15 percent, were admitted to schools outside the State; 1478, or 52 percent, of the Cadet Nurse Corps enrollment in Tennessee schools were from outside the State.

Table X

Migration of Cadet Nurse Corps Enrollment Presented for Comparison

S t a t e	Total Resident Cadets	Resident Admissions in State	Resident Admissions to Out-of-State Schools		Non- resident Admissions
			Number	Percent	
Tennessee	1609	1363	246	15	1478
Kentucky	1981	1310	671	34	455
Virginia	3038	2385	653	21	878
North Carolina	3527	2673	854	24	492
Georgia	2356	1973	383	16	863
Alabama	1625	1236	489	30	361
Arkansas	1508	760	748	49	133
Missouri	2958	2437	521	21	1868
Minnesota	5796	4909	887	15	2060
New York	13696	12405	1291	9	2655
Washington	1082	762	320	29	815

Currently 56 percent of 1028 students in 12 schools are from Tennessee. Information for 245 students in four schools was not available. Tables XI and XII show the number of schools in each category of size of enrollment and in each category of size of hospital.

Table XI

Distribution of Schools by Number of Students Enrolled

Number of Students	Number of Schools
0 -- 19	1
20 - 49	3
50 - 74	3
75 - 99	5
100 - 149	3
150 - 199	1

Table XII

Distribution of Schools by Census in Hospital with Which School is Connected

Patient Census	Number of Schools
50 - 99	2
100 - 149	2
150 - 199	3
200 - 249	2
250 - 299	2
300 - 399	1
400 - 449	2
450 plus	1

As can be seen by these figures, 25 percent of the schools have a total enrollment of less than 50 students each, and 50 percent less than 100 students. Twelve and a half percent of the schools are affiliated with hospitals having a daily average of less than 100 patients; and 50 percent of schools with hospitals having a daily average of more than 200 patients.



The number of students who leave nursing schools before completing the program of study is high as shown by table XIII.

Table XIII

Rate of Student Withdrawals from Tennessee Schools

Year	Number <sup>1/</sup> Schools	T o t a l Admissions	T o t a l Graduations	Percent Withdrawal
1941	13	702	404	43
1942	13	680	374	45
1943	14	738	488	34
1944	13	1022	545	46
1945	12	721	433	40
1946	12	402	245	39
1947	13	549	343	38

Table XIV

Reasons for 419 Withdrawals During the Last Three Years.

	No. of Schools	No. of Students
Failure in classwork	9	119
Marriage	10	111
Disliked nursing	6	55
Personal reasons	10	40
Health	7	34
No reason given	2	25
Unsatisfactory conduct	4	17
Personality difficulty	3	13
Emotional reasons	2	4
Transfer	1	1

All schools of nursing in Tennessee offer experience in medical, surgical and obstetric nursing in the home hospital. Psychiatric nursing experience is provided all students in six schools; tuberculosis nursing in all students in two schools. Information regarding clinical experience is shown in detail in the table below:

Table XV

Clinical Experience Offered in Schools of Nursing

Experience Offered	Number of Schools		
	To Home	All Students Affiliation	To Some Students
Medical	<sup>2/</sup> 16		
Surgical	<sup>2/</sup> 16		
Pediatric	13	3	
Obstetric	16		
Psychiatric	2	<sup>2/</sup> 4	
Communicable disease	3		
Tuberculosis	2		1
Outpatient	10		
Emergency room	2		
Public health		2	3 (total 8)
Nursery school		3	

- <sup>1/</sup> Number of schools for which information is available  
<sup>2/</sup> Two in non-separated service  
<sup>3/</sup> Three Out-of-state



One criterion for determining quality of the educational program offered in a school of nursing is the preparation of instructional personnel. Table XVI shows preparation and functions of this personnel and of teaching supervisors in Tennessee. Of the 19 clinical instructors employed in the State, 13 are in the two degree schools; five are in one hospital-controlled school, and one in another, leaving two schools with no clinical instructor. The ratio of instructional personnel to students in 13 schools (excluding the three schools with more than one clinical instructor) is 1:33. This ratio should be compared with a desirable ratio of 1:7. Head nurses are not included as instructional personnel both because of lack of preparation, and because they do no teaching.

Eleven of the 18 faculty members having Master's degrees, and 12 of 43 having Bachelor's degrees are in the two schools offering degree programs. In the table five assistant directors with little responsibility for education are included because these nurses possess preparation for the functions which they perform, and this preparation is helpful to the school.

Head nurses are not included in the table. In general they lack preparation for their nursing service functions as well as functions as assistant clinical instructors which they seldom perform.

Preparation of nurses in hospitals without schools is not shown. In general, nurses in administration and supervision of nursing service in hospitals without schools lack preparation beyond graduation from basic programs.



Table XVI

## Preparation and Duties of School Personnel

P o s i t i o n	Total in State	Master's Degree	B.S. Degree	1/2 Credit Toward BS	Less Than 1/2 Credit	No College	P.G. Including Specialty	F u n c t i o n s		
								S of N Only	Service Only	School & Service
Group A										
T o t a l	67	11	32	10	9	4		44	5	18
Dean	2	1	1	2	2	1		2		11
Director of Nursing	14	2	7		2	2		3	5	3
Ass't. Director	8		4		2					2
Educational Dir.	7	PhD	3	3	3			5		1
N.A. Instructor	14	1	7	3	1			13		1
Ass't. N.A. Instr.	5		4		1	1		4		1
Instructor	14	6	5	1	1			14		
Science Instr.	3	1	1	1				3		
Group B										
T o t a l	19	6	11	2				19		
Clinical Inst. (Med)	4	1	1	2				4		
Surgery	4	2	2					4		
Pediatrics	3	1	2					3		
Obstetrics	3		3					3		
Psychiatry	2		2					2		
Public Health	3	2	1					3		
Group C										
T o t a l	29		8	4	8	9	14			
Teaching Supervisors	10		2	2	4	2	6			10
Operating Room	7		2	1	1	3	4			7
Obstetric	1					1				1
Delivery Room	1		1							1
Psychiatric	1				2		3			1
Pediatric	4			1	1		1			4
Nursery	2									2
Medicine	1		1							1
Surgery	2		2							2
Emergency Room	1		1			1				1



Examination of school programs revealed the following facts: five schools have good libraries; four have good teaching facilities, in three schools the teaching facilities (laboratories and classrooms) were considered inadequate; seven schools have student government organizations, some of which do not achieve the goal of good personnel policies; and four have organized guidance programs. Additional details of school policies are shown in the table below:

Table XVII

School Policies						
Practice Week			Vacation - 15 Schools			
<u>42 hrs.</u>	<u>44 hrs.</u>	<u>48 hrs.</u>	<u>8 wks.</u>	<u>9 wks.</u>	<u>10 wks.</u>	<u>12 wks.</u>
1	2	13	2	7	4	2
Health Programs						
Sick Leave				Chest X-Rays		
<u>None</u>	<u>7D</u>	<u>14D</u>	<u>21D</u>			
10	1	4	1	5 - Semi-annually		
				6 - On admission and annually		
				5 - No schedule		

Thirteen schools will not admit men students; three will admit qualified men applicants; nine schools will admit married students; six will not; ten schools will retain students who marry; five will not; one school admits negro students only.

Personnel policies for graduate nurses employed in hospitals affiliated with schools of nursing are shown in the table following:



Table XVIII

## Personnel Practices for Graduate Nurses in Hospitals With Schools

<u>Weekly Schedules</u>				<u>Sick Leave With Pay</u>	
<u>Staff Nurses</u>		<u>Vacation</u>			
44 hours	3 hospitals	None	1 hospital	None	1 hosp.
		20 d	1 "	10d-2 wks.	9 "
		2 weeks	6 "	No. info.	6 "
		3 "	3 "		
		4 " maximum	1 "		
		None employed	1 "		
		No info. avail.	3 "		
<u>Head Nurses</u>					
48 hours	11 hospitals	None	1 hospital	None	1 hosp.
44 "	5 "	2 weeks	6 "	1 week	1 "
		3 "	3 "	10d	1 "
		4 "	1 "	2 week	6 "
		No Info.	4 "	As required	1 "
				No info.	6 "
<u>Supervisors</u> <sup>1/</sup>					
48 hours	4 hospitals	2 weeks	3 hospitals	1 week	1 hosp.
44 "	3 "	20 d	1 "	10d	1 "
		3 weeks	2 "	2 weeks	2 "
		No inf.	1 "	As req.	2 "
				No inf.	1 "
<u>Instructors</u>					
48 hours	4 hospitals	Same as Supervisors		Same as supervisors	
44 "	9 "				
No. inf.	5 "				

<sup>1/</sup> Only 7 hospitals with schools have this category.



Salary scales for graduate nurses in these hospitals varied greatly. An attempt to summarize this information giving maximum and minimum salaries resulted in the following:

<u>Staff Nurses</u>	<u>Minimum</u>	<u>Maximum</u>
By the day	\$ 7.25 one meal	\$ 9.00
By the month	\$ 170 Total	(205- with meals & ldry. (215. Total without bd. room and laundry
Varied with hours 7-3	\$ 170.	\$ 175-190 Rotating, 1 hosp.
3-11	\$ 185.	\$ 200
11-7	\$ 180.	\$ 200

<u>Head Nurses</u>		
By the day	\$ 8.00 1/	\$ 10. with degree
By the month	\$ 140. without board room and ldry.	\$210 Meals and laundry in addition

<u>Supervisors</u>		
By the month	\$ 150. 1/ without board room and ldry.	\$ 265 Full maintenance 1 hospital \$ 235 with laundry & meals

<u>Instructional</u>		
By day (1 only-daily basis)	\$ 9.50	\$ 11 (some hospitals room and laundry)
By the month	\$ 145 without bd., rm. ldry.	\$260 Total without board room and laundry

Range in minimum salaries \$145 (total) to \$235 with one meal

Range in maximum salaries (\$145 total or \$225 with laundry to \$417 without board, room and laundry)

#### Advanced Courses

There are two programs of advanced courses in the State both giving Public Health as the major. One school has 85 students enrolled this year; the other had an average enrollment of 106 for 1948-1949. A high proportion of the total number of graduate nurses enrolled in these programs come from outside Tennessee and do not remain in the State. There are no facilities for preparation of graduate nurses in other fields.

1/ The hospital giving this minimum did not employ staff nurses.



## B. Training Programs for Practical Nurses

In February 1945 an amendment to the Nurse Practice Act providing for permissive licensing of practical nurses was passed. In 1947 the first practical nurse school was organized. There are now three schools conducted by city public schools in cooperation with the Division of Vocational Education, State Department of Education.

Standards for practical nurse schools in Tennessee are in accordance with policies outlined by the National Organization for Practical Nurse Education in "Minimum Standards of Practical Nurse Schools", and with those set forth in "Practical Nurse--Analysis of Practical Nurse Education with Suggestions for the Organization of Training Programs" published by the U. S. Office of Education, Federal Security Agency.

Approximately 150 students are enrolled in these three schools. The trend in preparation of practical nurses is new. In the State the support of the profession in working out plans and securing qualified directors of the programs is to be highly commended.



SECTION IV - Estimate of Current and Future Needs of Nursing Personnel  
and Existing Deficits in Tennessee

- A. Current and Future Needs - It is estimated that 10,246 nursing personnel are needed currently in Tennessee, 6026 professional nurses and 4220 non-professional. Current needs in various categories are shown below:

Table XIX  
Estimate of Current Nurse Personnel Needs in Tennessee

Type of Service	Total	Professional	Non-prof.
Total	10,246	6,026	4,220
Public health	704	704	
Industry	860	860	
Office nursing	318	318	
Private practice	891	891	
Hospitals	7,318	3,098	4,220
Miscellaneous	155	155	

Estimated needs for 1955 are 15,122 nursing personnel--7890 professional and 7232 non-professional; for 1960, 18,931 nursing personnel--9403 professional and 9529 non-professional. Needs by categories for these years are given:

Table XX  
Estimate of Future Nurse Personnel Needs in Tennessee

Type of Service	1955			1960		
	Total	Prof.	Non-prof.	Total	Prof.	Non-prof.
Total	15,122	7,890	7,232	18,931	9,402	9,529
Public health	741	741		774	774	
Industry	860	860		860	860	
Office nursing	318	318		318	318	
Private practice	891	891		891	891	
Hospitals	12,157	4,925	7,232	15,933	6,404	9,529

1. Public Health

A minimum of one public health nurse to each 5000 population is recommended for a program of disease prevention and control 1/. If home care is to be provided also, a ratio of 1:2000 is recommended 2/. On the basis of 3,167,230 population in 1948, 633 staff nurses are needed to provide minimum public health care; 1584 to provide optimum service of 1 nurse to each 2000 population. One supervisor to 10 staff nurses is the accepted standard 2/. See table below for estimated number of public health nurses currently needed; 1955 and 1960 needs:

Table XXI

Estimated Number Public Health Nurses Needed to Give Minimum Care

	Current	1955	1960
Estimated Population 3/	3,197,704	3,372,250	3,521,893
Total nurses	704	741	774
Staff nurses	640	674	704
Supervisors	64	67	70

- 1/ Emerson, Haven: Local Health Units for the Nation-Commonwealth Fund, NY, 1945  
 2/ Committee representing Nat'l. and Federal agencies concerning with Public Health nursing: Desirable Organization of PHN for Family Service, PHN, 38:387, August 1946.  
 3/ Estimate as of July 1, 1949 - State Health Department



Table 2.1

## Estimated Number Public Health Nurses Needed to Give Optimum Care

	Current	1955	1960
Estimated population	3,197,704	3,372,250	3,521,893
Total nurses	1,760	1,854	1,937
Staff nurses	1,600	1,686	1,761
Supervisors	160	168	176

It is likely that by 1960 some functions now performed by the public health nurse and to be included in a program which provides for bedside care may safely be performed by the licensed practical nurse thus releasing the prepared public health nurse to perform those functions which require greater skill. By this date the number of licensed practical nurses will have increased and it is anticipated we may have a desirable ratio of public health nurses to licensed practical nurses as we are approaching in the ratio of hospital nurse to licensed practical nurse. The extent of possible supplementation by trained practical nurses in the field of public health nursing is not included in this study.

## 2. Industrial Nurses

The Department of Employment Security furnished the following figures for the number of industries in Tennessee in 1947:

<u>Size of Plant</u> <u>(No. of Employees)</u>	<u>Number of</u> <u>Plants</u>
Total.....	516
101 - 500.....	428
501 - 1000.....	57
1001 plus....	31

On basis of size and number of plants in 1949 a further breakdown of the first category was estimated as follows:

<u>No. Employees</u>	<u>No. Plants</u>
101 - 250.....	291
251 - 500.....	137

The following standards <sup>1/</sup> for numbers of nurses needed by industrial plants were used to determine the number of nurses needed in Tennessee.

1 nurse	- up to 300 employees
2 or more nurses	- up to 600 "
3 or more nurses	- up to 1000 "
1 nurse per each additional 1000	" up to 5000

<u>Size of Plant</u> <u>No. Employees</u>	<u>Number</u> <u>of Plants</u>	<u>No. Nurses</u> <u>Needed</u>	<u>No. Nurses</u> <u>Now Employed</u>
101 - 250	291	291	
251 - 500	137	274	
501 - 1000	57	171	
1000	31	93	
Additional 1000 <sup>2/</sup>	31	31	
		860	210

<sup>1/</sup> Nursing Practices for Industry - PH Bulletin #283 - U.S. Government Printing Office, Washington 25, D. C., 1944

<sup>2/</sup> Assuming average employees of these plants to be 1724 as in 1939

The number of industrial plants in Tennessee increased from 308 in 1939 to 516 in 1947 - an increase of 67 percent. Since it is unlikely that industrial expansion will continue at this rate, although it has continued to some extent, and since the number of nurses currently needed in industry is four times the number employed, the number needed has been held constant for 1955 and 1960.

### 3. Offices and Private Practice

There are no known standards for determining the number of nurse personnel needed in offices and private practice; therefore, it is assumed the number presently employed may be held constant for future needs. The future need for nurse personnel in this category in either hospitals or homes may possibly decrease as hospitals provide more adequate nursing care and are increasingly used.

### 4. Hospitals

It is estimated that 7318 nurses are needed to care for patients now in Tennessee exclusive of those in Federal hospitals. Estimates were made of current and future needs for nurse personnel in general and allied special, mental, chronic, and tuberculosis hospitals. These figures, and methods of computation are shown in tables and text to follow:

Table XXIII

Current Need for Nurse Personnel in Hospitals

Type of Hospital	Daily Av. 1/ Pt. Census	Nurses Needed	Prof.	Non-prof.
T o t a l		7318	3098	4220
General and allied special	6310 <sup>2/</sup>	4561 <sup>3/</sup>	2660	1901
Mental	7261	2105 <sup>4/</sup>	290	1815
Chronic	1449	374 <sup>5/</sup>	60	314
Tuberculosis	1068 <sup>6/</sup>	278 <sup>6/</sup>	88	190

The Council recommended that a ratio of one professional to one practical nurse be used in making estimates of number of nurses needed in general hospitals. For purposes of comparison the following table is presented to show the need for nurses should this ratio become two professional to one practical nurse. The same methods of computation are used for this table as for table XXIII, except for change in professional to practical nurse ratio in general hospitals.

Note: See Page 19 for footnotes for Table XXIII



Table XXIV  
Current Need for Nurse Personnel in Hospitals at Ratio of  
Two Professional Nurses to One Non-professional Personnel

Type of Hospital	Daily Av. 1/ Pt. Census	Nurses Needed	Prof.	Non-prof.
T o t a l		7318	3732	3586
General and allied special	6310 <sup>2/</sup>	4561 <sup>3/</sup>	3294 <sup>3/</sup>	1267
Mental	7261	2105 <sup>4/</sup>	290	1815
Chronic	1449	374 <sup>5/</sup>	60	314
Tuberculosis	1068 <sup>6/</sup>	278 <sup>6/</sup>	88	190

- 1/ State Health Department  
2/ Including estimated number newborn  
3/ Formula from "Measuring Nursing Resources-P.H.S., 1949"  
6310 daily Av. No. pts x 3.5 hrs. care daily ÷ 8 av. hr. per work day =  
No. nursing personnel required per day to meet selected standard of  
average hours of bedside care.  
365 days in year x 2761 = 3802 total no. bedside nurse personnel needed  
265 av. no. days worked  
per year by each member  
of nurse personnel  
At ratio 2 prof. to 1 non-prof. - 2535 prof. + 759 administrative) = 3294  
3294 ÷ 1267 = 4561 1267 non-prof. & supervisory ) =

At ratio of 1 prof. to 1 non-prof. - 1901 ÷ 759 = 2660  
1901 non-p. 1901  
4561

- 4/ 7261 ÷ 25 = 290 prof. nurses 7261 ÷ 4 = 1815 non-prof. personnel  
290 + 1815 = 2105 Total number nurses needed

- 5/ 1449 daily av. no. pts. x 1.5 hrs. care daily ÷ 8 av. hrs per work day  
272 number personnel required  
365 days in year x 272 = 375 Total number nurses needed  
265 av. no. days worked  
At ratio 1 prof. to 5 non-prof. 60 prof. nurses  
314 non-prof. personnel

- 6/ Figures from St. Health Dept. - Total beds 1336 (Infirmary 851  
(semi-ambulant 485

Number patients at 80% occupancy - 1068 (Infirmary 680  
(Semi-ambulant 388

680 infirmary pts. ÷ 3 = 227 total nurses 390 semi-ambulant ÷ 8 = 50 total  
76-1/3 prof. 12 1/4 prof.  
152 non-prof. 38 n-prof.

76 + 12 = 88 prof.  
152 + 38 = 190 non-prof.

Total 276 nurses

Table XXV

## Future Needs for Nursing Personnel in Tennessee Hospitals

Type Hospital	1 9 5 5				1 9 6 0			
	Daily Average No. Pts.	Total Nurses Needed	Prof.	Non-prof.	Number Patients	Nurses Needed	Prof.	N-Prof.
T o t a l	28,222	12,157	4925	7232	36,705	15,933	6404	9529
General	9,712	7,017 <sup>1/</sup>	4092	2925	12,676	9,158	5340	3818
Mental	12,493	3,623 <sup>2/</sup>	500	3123	16,725	4,850	669	4181
Chronic	3,777	975 <sup>3/</sup>	163	812	5,634	1,454	242	1212
Tuberculosis	2,240	542 <sup>4/</sup>	170	372	1,670	471	153	318

1/  $9712 \times 3.5 \div 8 = 4249$   $\frac{365}{265} \times 4249 = 5851$  Total number nurses needed  
 At ratio 1 prof. to 1 non-prof.  $2925 \text{ prof.} + 1166 \text{ adm. \& supervisory} = 4092 \text{ prof.}$   
 $2925 \text{ non-prof.}$

$4092 \text{ prof.} + 2925 \text{ non-prof.} = 7017$  Total number nursing personnel

2/  $12,493 \div 25 = 500$  }  $= 3623$  Total number nursing personnel  
 $12,493 \div 4 = 3123$  }

3/  $3777 \times 1.5 \div 8 = 708$   $\frac{365}{265} \times 708 = 975$  Total number nurses needed

At ratio 1 prof. to 5 non-prof.  $163 \text{ prof.} + 812 \text{ non-prof.} = 975$  Total

4/ Infirmary 1260 pts.  $\div 3 = \frac{420}{140}$  nurses  
 $\frac{140}{280}$  1/3 professional  
 non-prof.

Semi-ambulant

980 pts.  $\div 8 = \frac{122}{30}$  nurses  
 $\frac{30}{92}$  1/4 professional  
 non-prof.

$140 \div 30 = 170$  prof. }  $= 542$  Total number nurses needed  
 $280 \div 92 = 372$  non-prof. }



## a. General and Allied Special

The number of nurse personnel needed in hospitals in this category was computed on basis of daily hours of care per patient (3.5 hours per patient in 24 hours <sup>1/</sup>). To determine appropriateness of selected standards in Tennessee a sample study was made of ten general hospitals of varying size, type and location. A brief description of the sample study and results is as follows:

1). Ownership or control:

Non-profit.....5  
City.....2  
Church.....2  
Partnership.....1

2). Size Beds	No. of Hospitals	Daily Av. No. Pts.	No. of Hospitals
50 - 99	4	0 - 49	3
100 - 199	1	50 - 99	1
200 - 299	3	100 - 199	3
300 plus	2	200 - 299	2
		300 plus	1

3) A composite picture of hours of nursing care and proportion given by professional and non-professional personnel is shown in table below:

Table XVI

Summary of Data Relative to Average Daily Hours of Bedside Care per Patient and Ratio of Professional to Non-Professional Personnel and Proportion of Care by Each Type

Number of Beds	No. of Hospitals	Total Hrs. of Care	Av. Hrs. Care in 24	Percent Care Given			Proportion	
				Prof.	Student	NonP	Prof.	N-prof.
50 - 99	4	681	3.3	33	10	57	1	1.3
100 - 199	1	472	3.5	29	15	56	1	1.2
200 - 299	3	2230	3.8	18	39	43	1	.6
300 plus	2	1896	2.9	24	23	53	1	.8

The ratio of professional to non-professional personnel in the ten hospitals ranged from 1 professional to 2 non-professional to 1 professional to .3 non-professional. In these hospitals the percent of care given by non-professional personnel on a single patient unit ranged from 20 percent to 100 percent. The range of minimums in all hospitals was 20 to 80 percent; of maximums, 46 percent to 100 percent.

<sup>1/</sup> 3.5 hours of care per patient in 24 hours adopted from Nursing Service in one Children's and 21 general hospitals. NLNE Department of Studies.

Other criteria used for determining nurse personnel needs in general hospitals are 1/:

Administrative Nursing Personnel per Daily Average Patient Census:

2 - Central administrative staff per 100 patients	<u>2/</u>
1 - Day supervisor	" 57 "
1 - Evening "	" 57 "
1 - Night "	" 80 "
1 - Head Nurse	" 19 "

It is estimated that 4561 nursing personnel are needed currently to care for 6310 daily average number of patients in general allied special hospitals. At a ratio of one professional to one non-professional the need is 2660 professional and 1901 non-professional nursing personnel.

Needs for nurse personnel in 1955 and 1960 were determined on basis of estimated population for those years and standard number of beds as provided in the State Health Plan at anticipated occupancy rate.

1955 Population (estimate).....	3,372,250 <sup>3/</sup>
Beds at 3.6 per 1000.....	12,140 <sup>4/</sup>
Patients at 80% occupancy...	9,712 <sup>5/</sup>
Total nurse personnel needed general hospitals.....	7,017
(See Table XXV)	

1960 Population (estimate).....	3,521,893
Beds at 4.5 per 1000.....	15,845
Patients at 80% occupancy.....	12,676
Total nurse personnel needed in general hospitals.....	9,158
(See Table XXV)	

E. Mental

The minimum standard for nursing personnel in mental hospitals 1/ is one professional nurse per 25 patients; one non-professional nursing personnel per 1 patients. Estimate of future nurse personnel needs in mental hospitals was made on basis of estimated population figures, planned number of beds, and present National rate of occupancy.

1955 Population.....	3,372,350
Beds at 3.9 per 1000.....	13,151
Patients at 95% occupancy....	12,492
Nurse personnel needed.....	3,623
(see Table XXV)	

1960 Population.....	3,521,893
Beds at 5 per 1000.....	17,605
Patients at 95% occupancy.....	16,725
Nurse personnel needed.....	4,850
(see Table XXV)	

1/ Adopted from NLNE Study  
2/ This criterion is from Distribution  
of Nursing Service During War, NLNE  
3/ State Health Dept. 4/

5/ Current occupancy rate;  
Journal A.M.A.  
6/ Standards for psychiatric  
hospitals, Amer. Psychiatric  
Assoc. 1945-46



•. Chronic

The number of nursing personnel needed to provide nursing care in chronic hospitals was determined on the basis of 1.5 average number of hours of bedside care in 24 hours at the ratio of one professional nurse to 5 non-professional nurse personnel. Future needs in these hospitals were computed on same basis as used for general and mental hospitals.

1955 Population..... 3,372,350  
Beds at 1.4 per 1000..... 4,721  
Patients at 80% occupancy.... 3,777  
Number nurse personnel needed 975  
(see Table XXV)

1960 Population..... 3,521,893  
Beds at 2 per 1000..... 7,042  
Patients at 80% occupancy.... 5,633  
Number nurse personnel needed 1,454  
(see Table XXV)

d. Tuberculosis

Patients in tuberculosis hospitals were considered in two groups-- infirmary and semi-ambulant. Determinations of nurse personnel needed were computed on the following nurse-patient ratios:

Infirmary patients - 1 nurse per 3 patients  
Semi-ambulant " - 1 " " 8 "

Professional and non-professional personnel were determined at proportion of 1 professional to 2 non-professional for infirmary patients; 1 professional to 3 non-professional for semi-ambulant. Future needs were estimated as in other types of hospitals.

1955 Population..... 3,372,250  
Beds at 2.5 per 1000..... 2,800 - 1575 infirmary  
1225 semi-ambulant

Patients at 80% occupancy.....2,240 - 1260 infirmary  
980 semi-ambulant

Nurse personnel needed..... 542  
(see Table XXV)

1960 Population..... 3,521,893  
Beds at 2.5 per 1000..... 2,088 - 1575 infirmary  
513 semi-ambulant

Patients at 80% occupancy..... 1,670 - 1260 infirmary  
410 semi-ambulant

Nurse personnel needed..... 471

## B. Deficits in Nursing Personnel

The total deficit of nurse personnel in Tennessee is 2812--1920 professional and 892 non-professional. If optimum public health nursing care is to be given, the deficit of professional nurses is 3867. The existing deficits in various categories are shown below:

Table XXVII

### Current Supply, Needs, and Deficits in Nursing Personnel

	Current Supply			Current Need			Current Deficit		
	Total	Prof.	Non-Prof.	Total	Prof.	Nonprof.	Total	Prof.	Nonpr.
T o t a l	7434	4106	3328	10,246	6026	4220	2812	1920	892
Public health	344	344		704	704		360	360	
Industry	236	236		860	860		624	624	
Office Nursing	318	318		318	318				
Private Practice	891	891		891	891				
Hospitals	5490	2162	3328	7,318	3098	4220	1828	936	892
Miscellaneous	155	155		155	155				

Deficits of nursing personnel in various categories will be discussed in Section V. For the purpose of more detailed analysis a breakdown of deficits of nursing personnel in each type of hospital is shown in Table XXVIII.

Table XXVIII

### Current Supply, Needs, and Deficits in Nursing Personnel by Types of Hospitals

	Current supply			Current Need			Current Deficit		
	Total	Prof.	Nonprof.	Total	Prof.	Nonprof.	Total	Prof.	NonP
T o t a l	5490	2162	3328	7318	3098	4220	1828	936	892
General and allied special	4479	2055	2424	4561	2660	1901	- 82	-605	-523 1/
Mental	526	25	501	2105	290	1815	-1579	-265	-1314
Chronic	313	46	267	374	60	314	-61	-14	-47
Tuberculosis	172	36	136	278	88	190	-106	-52	-54

1/ Note: No deficit but rather an excess of this type of personnel exists in these hospitals.



## SECTION V - Summary and Conclusions

Findings of this study permit analysis of the extent to which the needs of the people of Tennessee for nursing and related services are being met both quantitatively and qualitatively.

There are currently employed in the State 4106 graduate nurses; 6026 are needed--making a deficit of 1920. The number of non-professional personnel employed is 3328, the need 4220, or a deficit of 892. These figures, which are components of the total, reveal more significant facts than the totals. For the average 6310 patients in general hospitals, 2055 graduate nurses are employed. By the standard of service designated as desirable by the Tennessee Council for Nursing 2660 are needed, representing a deficit of 605. By these same standards 1901 non-professional personnel are needed or 523 less than the number (2424) now employed.

It should be noted that the ratio of graduate nurses to non-professional personnel giving bedside care chosen as desirable by the Council, is one to one, which, according to National recommendations calls for a minimum of professional nurses. It would, therefore, seem unwise to conclude that the excess of non-professional personnel cancels the deficit of graduate nurses. The question of safety and possible effectiveness of the therapeutic program for patients, particularly since the number of non-professional personnel is not only too high in relation to graduate nurses, but also as a group are inadequately supervised and largely untrained.

The fact that in a few hospitals the non-professional personnel is trained, and is not out of proportion to the number of graduate nurses means that for many other hospitals the inadequacies are greater than the state-wide ratio indicates.

The proportion of service rendered by students in several hospitals with schools is also high and in the absence of adequate supervision and instruction constitutes a possible threat to patient safety and effective care. The educational aspects of this finding will be discussed later.

Head nurses, supervisors and directors of nursing service (often identical with the director of the school of nursing in hospitals with schools) are for the most part without special preparation for guiding and organizing the work of the graduate staff nurse and non-professional personnel. There are, of course, notable exceptions. An immediate approach to this problem is fundamental to the solution of the entire staffing problem.

The number of patients requiring care will increase markedly as the proposed expansion materializes and the available beds become more adequate to meet total State needs.

The 7261 patients in mental hospitals receive care from 25 professional nurses and 501 non-professional personnel. The Council adopted the standards of service recommended by experts in this field. The deficit between present service and recommended service requires 265 or 1060 percent more graduate nurses and 1314, or 262 percent more non-professional personnel. These figures become all the more striking when the proposed increase of 88 percent in mental hospital beds is considered. An extremely high proportion of the total nurse supply is not prepared to care of these patients by the minimum three months experience recommended for all nursing schools.



The need for on-the-job training of employed personnel and for continuous production of nurses and attendants for this field is acute. The need for personnel prepared for work in prevention of mental illness is made vivid when the cost to the citizens of the State for responsibility of mental patients is considered. Improved care in institutions can materially decrease the length of hospitalization and costs, not to mention the savings in human misery and lost production of workers in the present situation.

Tuberculosis sanatoria with 1068 patients now employ 36 graduate nurses and 136 non-professional personnel. To reach recommended standards of service 88 graduate and 190 trained practical nurses are required. The expected augmented bed capacity will increase the need to 170 graduate and 372 practical nurses. With the tuberculosis incidence in Tennessee the second highest in the United States, the need for action in securing the additional number of beds and sufficient personnel to give these patients the special care they merit is apparent.

Many tuberculosis patients are admitted to general hospitals. The program of prevention and public education requires the support of all nurses. At present very few nurses in Tennessee have had instruction and experience in this type of nursing which is frequently required of all nurses, and of many nurses (for increased beds) continuously.

Tennessee, like all the other States, must expect an immediate increase in demands for services for patients with chronic illness. The rapid increase in proportion population over 60 years of age and other factors create this demand in both institutions and homes. Within a few years an organized service in homes is likely to be demanded. In this field the proportion of non-professional personnel to graduate nurses can justifiably be larger than in other fields. The 1449 patients now in this type hospitals are cared for by 313 nursing personnel--46 graduate nurses and 267 non-professional personnel. For recommended staffing, 60 of the former and 314 of the latter are needed. Expansion of need will probably be rapid (1000 percent foreseeably).

At present 344 public health nurses are employed in Tennessee--a ratio of 1:10,800, as compared with 1:6600 in the Nation as a whole; and with 1:5000, the recommended standard when public health nurses do not carry bedside nursing functions. Bedside care functions are rather certain to be added if the State follows trends detectable elsewhere; and if the challenge of care for chronically ill in homes is to be met by the required ratio of 1:2500.

The need for expanded prevention service is also great if the example of achievement in care of premature infants (for example) is to be duplicated in the fields of other health problems. The attack on this need is twofold; increase markedly above the current 50 percent of those public health nurses now employed who have had preparation for this work; and aim to double (at least) the total number employed.

Nurses employed in industry now number 236. The economic value of the health program in industry has been demonstrated, and the problem here is that of extending the service for more nearly 100 percent of workers and families. To cover all workers at a desired ratio will require 860 nurses. In the last ten years the number of nurses has increased steadily. Acceleration of this trend is needed.



For nurses in doctors' offices and in private practice, no marked increase in demand is predicted although if the doctor population in the State increases and the doctor's office is used to decrease, to some extent, the very marked increase in demand for hospital service, the former estimate may require early review. The number now in doctors' offices is 318 and in private practice 891.

In summary, the current deficit in graduate nurses is 1920 with the most crying needs in mental hospitals quantitatively speaking. Qualitatively speaking, the most serious lacks are nurses with psychiatric preparation (for the sake of general care of all patients and especially of psychiatric patients), skills in tuberculosis nursing, and in public health nursing. While detailed information was not sought on the difference in supply of nursing services in rural and urban areas of the State, the needs appear to be more acute in rural areas. In all fields, prepared supervisors and administrators of nursing services are urgently needed in order to develop efficiency and economy in the care of patients.

The current deficit in non-professional personnel is 892; even greater than the need to decrease the deficit, however, is the need to train those now employed who have no training. The current high percentage of untrained workers being used is uneconomical and in some instances dangerous.

The educational plant of the State needs expansion and improvement. The schools (practical nurse schools, basic nursing schools in universities and hospitals, and advanced programs for preparation of graduate nurses in universities) must be geared to meet both qualitative and quantitative needs of the State.

At present a large proportion of the schools omit tuberculosis and psychiatric nursing from the training of students; only two basic schools prepare public health nurses--one for Negroes only and the other with a majority of its students from outside the State. Most students have too scant supervision by expert graduate nurses and too great responsibility for patient care for which they are not prepared--thus, adding to the danger to patients in the high proportion of untrained non-professional personnel. Modern advances in medicine cannot be translated into patient service without nurses who are prepared more comprehensively than at present.

The desired capacity of the educational plant should be determined by the State needs for graduate nurses, trained practical nurses, and for nurses with advanced preparation.

Estimating the number of students which should be admitted annually involves balancing many factors, among them the following:

1. The likelihood that construction of needed hospitals of all types will materialize according to plan
2. The likelihood that desired nurse patient ratios can be financed by hospitals and that desired public health nurse population ratios will be provided for in public health agency budgets
3. The prospect of controlling student withdrawal rates in schools of nursing through application of known techniques



To meet by 1960, the total State need for nurses estimated herein for 1955 the annual admissions to schools of nursing should be 1325 <sup>1</sup>/<sub>2</sub>. This figure is revised to 900, however, in light of the fact that the total number of nurses needed in 1955 included the following:

1. An increase over current supply of 3097, or 589 percent in mental hospitals (assuming also an increase in beds of 88 percent)
2. An increase in nurses for chronic patients of 662, or 211 percent (based on an increase in beds of 2234, or 90 percent)
3. An increase of 397 public health nurses, or 115 percent to bring the ratio of nurse to population to minimum standard.

These fields of nursing called for the most striking increases and the likelihood that construction and staffing budgets will provide the basis for these increases is a matter of decision for the people of Tennessee.

In view of the impossibility of predicting the development of the hospitals and public health programs in the State, it is suggested that annual admissions be aimed at 900 until such time as a review of progress shows that hospital construction and operating budgets, and those of public health agencies provide facilities approaching the figures (for beds, etc.) used in preparation of Table XX.

Admission of 900 students annually, with the recommended decrease in student withdrawal rates should provide by 1960, an increase of approximately 2000 nurses over the current supply. Obviously, this increase will not be sufficient should all plans materialize for meeting recommended ratios of beds to population and expected expansion of public health programs. It is for this reason these figures should be reviewed in three years, or after reasonable progress has been made.

The existing schools connected with hospitals of more than 100 patients, with their needed additional affiliations, can accommodate 900 admissions annually. At least 70 percent of these admissions should continue to graduation. For the last seven years, average loss between admissions and graduations has been 41 percent, 28 percent being due to failure in courses. Tests are available to predict which candidates can succeed. These, and other selection techniques, with improved counseling and educational programs to attract good students should assure 70 percent production.

The major portion of the total students have experience in urban hospitals only. Attractive experience for all students in rural communities would encourage nurses to locate in these areas after graduation, and the experience (if not exclusively in small hospitals) would add facets of preparation not otherwise available. That most of the existing schools are in larger centers is a fortunate circumstance. Addition of small community experience to the offerings of these schools should be relatively simple to accomplish.

1/ Based on estimates of the present and future pools of professional nurse personnel and needs as shown in Tables XIX and XX. The future pool of professional personnel is composed of nurses now employed minus the attrition rate (8%- 10% per annum), plus students enrolled in approved basic schools minus the withdrawal rate (30% annually).



*Feasibly college nursing prog. sees itself as offering supplementary education & thinks it will not need to continue much longer! or should not!*

The educational facilities in the State for public health nurses now prepare a rather small number of graduate nurses from Tennessee for this field by supplementing their basic nursing education. When basic preparation for public health nursing is available at the University of Tennessee and enrollment of Tennessee nurses at Vanderbilt and Meharry are increased, this supplementation will not be so greatly needed. One of these advanced programs should consider the possibility of preparing supervisors for public health nursing services. More than 150 nurses now employed need basic public health preparation and if the total supply of public health nurses is to be doubled, the utilization of educational facilities both inside and outside the State should be markedly increased.

There are no educational facilities within the State for the preparation of head nurses, supervisors, and directors of nursing services in hospitals, or to prepare instructors and directors of schools of nursing. Graduate nurses need financial assistance and encouragement to seek this preparation outside the State. The returns on such an investment would be tremendous. To increase the ratio of instructional personnel to students from 1:33 to 1:7 would require a fourfold increase. In addition, not all instructors now employed have advanced preparation.

The 14 schools in hospitals with a daily average of more than 100 patients could accommodate a total of 900 admissions annually with careful planning. Simultaneously, with increasing admissions, the concentration of students on medical, surgical, and obstetric services, needs to be decreased. Additional experience in outpatient departments, tuberculosis, psychiatric, and in rural communities for all students, and public health for all degree candidates would increase the total potential capacity to 900 admissions annually. To expand these schools to that extent, additional residences, laboratories, classrooms, and library facilities would be required, and a larger number of qualified instructors would be needed. Failure to make these additions will mean a continued shortage of nurses with the consequent inability to expand the health and hospital programs as now contemplated.

Training programs for practical nurses are inadequate to prepare the 4000 trained non-professional personnel now needed in the State. To make up this existing deficit of 892 by 1960 and maintain the current supply would necessitate admission of 575 students annually from 1949 to 1959 - 1/.

To make up the current deficit and maintain the current supply, as well as to care for future deficits which will occur by 1955 if planned increase in bed capacity is realized, will necessitate admissions of 1100 students annually from 1949 to 1959.

1/ Computation of these figures were made by the process used in determining admissions to professional schools of nursing. In the absence of an established attrition rate for non-professional nurse personnel, the same loss per year has been assumed for this group as that of the professional group. From figures available it appears reasonable to assume that the same withdrawal rate is applicable to both groups.



## SECTION VI - RECOMMENDATIONS

1. In order to provide adequately for expanding hospitals and other health services in the State and eradicate the existing deficits of 1900 graduate nurses and 892 non-professional personnel, the number of graduate nurses should be increased by 2000, and non-professional by 900.
2. The quality of nursing service in general hospitals should be improved and welfare of patients safeguarded by a 47 percent increase in the total number of graduate nurses and in the proportion of total service rendered by them. This higher proportion of care given by graduate nurses should be effected by decreasing the number of non-professional personnel by 21 percent, and reducing the high ratio of care now given by student nurses to medical, surgical, and obstetric patients.
3. Nursing service for the 7261 patients in mental hospitals should be improved by increasing the number of graduate nurses from 25 to 290, and non-professional personnel from 501 to 1800. Both professional and non-professional personnel should have special preparation for this type of nursing service. Preventive programs in this field should be employed to lessen continued mounting needs for hospital facilities for mental patients. (The State Plan provides for the addition of 6000 beds in mental hospitals by 1955).
4. The ratio of one public health nurse to 10,800 population should be brought to 1:5000 as quickly as possible in order to give preventive programs in all fields an opportunity to achieve their purpose. This will entail production of an additional 300 public health nurses, and the provision of educational facilities for those now employed who lack that preparation.
5. The annual admissions to basic nursing schools should be increased immediately to 900 per year and maintained at that figure until 1960 in order to fulfill recommendation One. Admissions to practical nurse schools should be brought to 600 annually to make up the current deficit and to train a higher proportion of the untrained personnel now employed. Approximately 200 of these candidates should be trained as attendants for mental hospitals.
6. To meet the needs of the people qualitatively:
  - a. Plans should be made immediately to provide psychiatric and tuberculosis nursing experience for all students in professional schools of nursing.
  - b. Rural or small hospital experience should be provided as soon as suitable locations can be determined and sufficient prepared instructional personnel secured to place at least one in each rural hospital to which students are to be assigned.



- c. Clinical experience in outpatient departments under direction of qualified clinical instructors (I.H.N.) should be provided all students in schools connected with hospitals where this experience is available.
  - d. Known technics should be applied in selection of students and in formation of school policies concerning hours of work, vacations, counseling, and guidance, and health programs.
  - e. The number of prepared instructional personnel should be increased, as a minimum, to the extent of one clinical instructor for each major experience--medicine, surgery, obstetrics, pediatrics, and public health--in all schools.
  - f. The number of prepared supervisory and head nurse personnel should be increased to insure safer care of patients, better planning for and supervision of student activities coming under their jurisdiction, and more effective and economic use of non-professional personnel.
  - g. Public health nursing should be included in the programs for all students in university basic schools of nursing.
  - h. An intensive recruitment program should be planned. This should be directed particularly toward creating interest in nursing among prospective high school graduates. To meet current needs for recommended number of admissions to professional schools of nursing and practical nurse programs, 15 percent of girls graduating from high schools in Tennessee from 1949-1959 must be enrolled. Admission of men students would help in meeting the shortage of recruits.
7. Because of greater educational effectiveness and economy of programs in larger schools connected with larger hospitals, schools in hospitals of less than 100 daily average patients should become units of larger schools and use facilities to provide small hospital experience for students from these schools.
  8. Teaching of biological, physical and social sciences by a college or university should be planned for students in all schools.
  9. Partially prepared school personnel should be released to complete preparation for their functions of planning school programs, guiding and teaching students.
  10. The need for scholarship assistance for basic school students and for graduate nurses needing additional preparation should be investigated.
  11. On the basis of need and the number of nurses who would probably avail themselves of this opportunity, Vanderbilt University should develop a program in Teaching in Schools of Nursing. A program for preparation of nurses to teach Psychiatric nursing is urgently needed.



12. Institutes on Ward Administration should be planned for presently employed head nurses having little or no preparation beyond the basic nursing course. Organized groups for discussion of common problems would be helpful to other categories of personnel, e.g. institutes.
13. The number of practical nurse schools in the State should be increased to meet needs for this type personnel in all hospitals.
14. With information from leading nurses of the State and from other health professions, the citizens of Tennessee should find a means of effecting their desires for improved health service. A broadly representative Council on Nursing is suggested as one means of organization for meeting the needs of the people for nursing service as outlined in this report or as revised by the Council. An attack on selected problems should be undertaken immediately. High priority should be given to:
  - a. Plan for additional practical nurse programs
  - b. Plan for inclusion of psychiatric and tuberculosis experience and small hospital experience in all basic school programs.
  - c. Plan for improvement of instructional personnel and increase in supply by:
    - 1) providing scholarship assistance
    - 2) providing leave of absence for nurses needing additional preparation
    - 3) Encouraging likely young graduates to prepare themselves for school positions
  - d. Finding means of presenting the attractions of nursing and related activities to appropriate young women and men of the State.
15. The findings and recommendations of this report should be reviewed in from three to five years to determine whether proposed health programs are developing so rapidly that these estimates of needed nurse power are inadequate.